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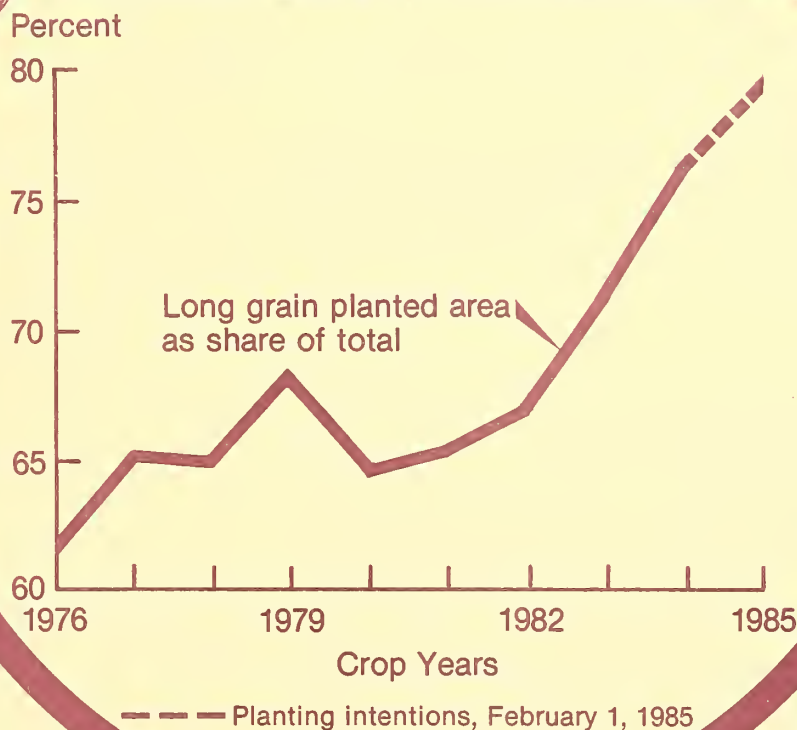
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March 1985
RS-45

Rice

Outlook and Situation Report

**Long Grain Captures
Increased Share of U.S. Planted Area**

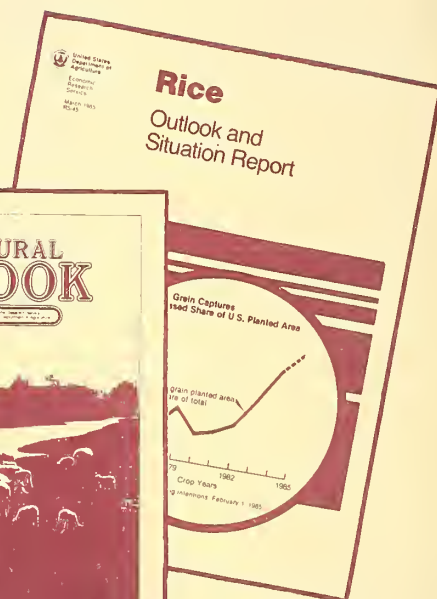
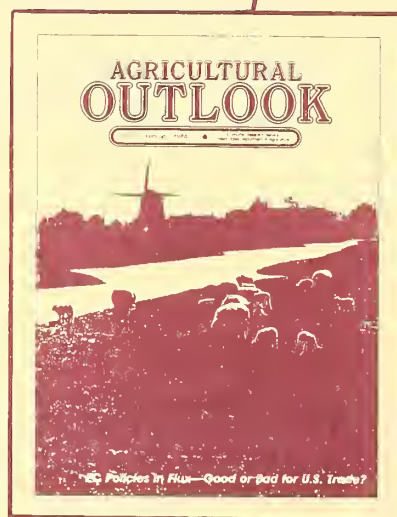


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SUMMARY

The current outlook for U.S. rice is dominated by large supplies, record yields, and weak demand. The likely outcome is a return to pre-PIK stock levels, with carryover on July 31, 1985, forecast at 64 million cwt.

Large supplies and weak demand resulted in a 5-month (August–December) average farm price of \$8.14 per cwt, near the \$8–loan rate. That price generated deficiency payments to 1984 program participants totaling about \$375 million, based on a payment rate of \$3.76 per cwt. For the entire 1984/85 season, rice prices are not likely to strengthen substantially: the season average is forecast between \$8 and \$8.50 a cwt, with long grain trading at loan levels.

The 1985 rice program calls for participants to comply with a 20-percent acreage reduction program and a 15-percent cash land diversion to be eligible for price and income support benefits of an \$8–per cwt loan rate, an \$11.90–target price, and a diversion payment rate of \$3.50 per cwt. The required acreage reduction in 1984 was 25 percent. Spring planting intentions, released in mid–February, showed that U.S. rice producers intend to plant just under 2.5 million acres for the 1985/86 rice crop, down 12 percent from last year. Perhaps the most interesting point of the intentions report is not the absolute number of acres, but their distribution by type of rice. The report shows producer intentions to plant 1.97 million acres, or 80 percent of the total, to long grain rice, a record share.

The Administration has proposed the Agricultural Adjustment Act of 1985. The Act is designed to set U.S. agriculture on a path toward greater market orientation, and provides for gradually lower target prices and lower loan rates, both based on moving averages of previous market prices. Nonrecourse loans up to \$200,000 per operator would continue to be available to producers who comply with voluntary acreage reductions to be eligible for program benefits. Provisions are similar for rice, cotton, and soybeans, and are included in this issue of the Rice Outlook and Situation.

Global rice production in 1984/85 is forecast at 465 million metric tons (rough basis), 3 percent greater than a year earlier, and 11 percent higher than 1982/83. But global consumption may increase by less than production, causing ending stocks to rise.

Overall, ample supplies in major importing countries are expected to result in sharply lower world rice trade during calendar year 1985, with prices weakening as exporters find themselves with sizable surpluses on hand. Thai prices for 100-percent B rice dipped below \$200 a ton in late January. Other exporters were asking equally low or lower prices. World milled rice trade is forecast at 11.6 million tons in calendar 1985, compared with 12.5 million in 1984. Although Thailand's rice crop is forecast to decline from last year's 19.6 million to 18.5 million in 1984/85, exports may dip to 4.3 million tons during calendar year 1985.

This issue of the Outlook and Situation looks at the loss in U.S. market share, and the countries that have gained market share, in the first of two special articles. Based on United Nations data, the U.S. share of imports by more than half of the regional markets studied declined between 1982 and 1983. Overall, the U.S. share of the world rice import market declined 5 percentage points from 1982 to 1983. This decline was accompanied by a significant decrease in the volume of U.S. rice exported during this period.

The second special article presents some observations on the response of Asian countries' area, yields, production, and consumption to changes in rice prices. Rice supply and demand are generally very price inelastic, and negative income elasticities in Asian rice exporting countries imply that rice consumption decreases as incomes increase and consumers purchase alternate foods. Thus, as incomes rise in these countries, more rice could be available for export, posing an even greater challenge to the U.S. rice industry in the world market.

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1984/85 RICE OUTLOOK AND SITUATION

The current outlook for U.S. rice is dominated by large supplies, record yields, and weak demand. The likely outcome is a return to pre-PIK stock levels, with carryover on July 31, 1985, forecast at 64 million cwt.

Large supplies and weak demand resulted in a 5-month (August-December) average farm price of \$8.14 per cwt, near the \$8-loan rate. That price generated deficiency payments to 1984 program participants totaling about \$375 million, based on a payment rate of \$3.76 per cwt. For the entire 1984/85 season, rice prices are not likely to strengthen substantially: the season average is forecast between \$8 and \$8.50 a cwt, with long grain trading at loan levels.

Rebound in Area, Record Yields: The Trends Point to Long Grain

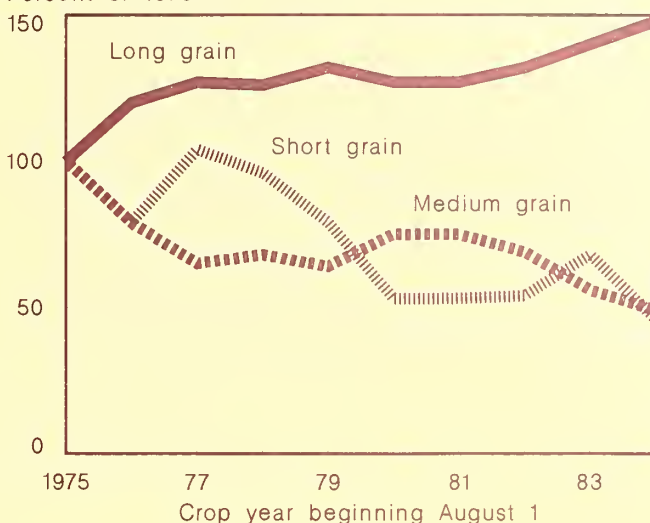
Harvested area rebounded sharply from PIK-reduced levels in 1983/84. Rice producers harvested 2.78 million acres in 1984, compared with 2.17 million in 1983—up 28 percent despite a sizable 25-percent acreage reduction program (ARP) in effect. The acreage recovery was most dramatic for long grain rice. Harvested area of 2.1 million acres was up 38 percent from a year earlier and off only 3 percent from 1982 levels. A continued trend toward long grain production is evident when area harvested by type is examined (fig. 1). Area harvested to medium and short grain shows downward trends, with no apparent signs of rebounding to 1982 levels, much less returning to the 1981 peak, when medium and short grain harvested area was almost 35 percent of the total. Notwithstanding the acreage reductions of the past few seasons, the market share for medium grain rice has deteriorated relative to 1980–81, and the shift in acreage reflects this. Losing the South Korea medium grain market (among other factors) precipitated a drop in the share of medium grain acreage to just 20 percent by 1984.

The appearance of a budding California long grain market also supports the trend toward long grain rice production. Area harvested to long grain rice in California, though not substantial on a national scale, is growing at a fast pace. From an initial 14,000 acres harvested in 1982, California long grain

Figure 1

Share of Harvested Acreage, By Type, 1975–84

Percent of 1975



area exploded to 59,000 in 1984, making up 14 percent of California's harvested rice acreage.

Finally, accelerating long grain rice yields will likely hasten this trend. In 1984/85, rice yields reached a record 4,926 pounds per acre. Long grain averaged 4,586 pounds, 10 percent better than the 1983/84 average. Two States, California and Texas, achieved average long grain yields of almost 5,000 pounds or more: Texas yields were just below the 5,000-pound mark at 4,950 and California yields averaged 6,300 pounds. Although yields of long grain rice still average well below medium and short grain, the continued shift to high-yielding long grain, plus California area expansion, promises the gap between long and medium/short grain yields will continue to narrow.

The boost in long grain yields also means a closer relationship between area harvested by type and share of total production. In 1983/84, 71.1 percent of harvested rice area produced a long grain crop equal to 64 percent of the U.S. rice crop. But higher long grain yields narrowed that gap: in 1984/85, 76 percent of the area harvested produced a long grain crop equal to 71 percent of the total rice harvest.

Supplies Recover, But Demand Remains Weak

Nationally, rice producers harvested 137 million cwt, or about 304 million bushels, of

rough rice in 1984. The 1984/85 season began with just under 47 million cwt of rice carryover, leaving total supplies including imports of about 185 million cwt, or 411 million bushels.

But for the fourth consecutive year, demand for U.S. rice is expected to remain depressed: exports are forecast at 62 million cwt, down 10 percent from a year earlier, and domestic use (including a residual) may total 59 million, up from 1983 but far below the 1981/82 record. Lower seed use and a leveling-off in demand by brewers are mainly responsible for the moderation in domestic

use. Overall beer consumption has been stable to stagnant over the past few years. The U.S. population has aged, and the post-World War II baby boom has grown up; as the population ages, trends in drinking habits change. Many States have raised the legal drinking age to 21, which may have helped slow beer sales recently. This effort affects one of the strongest beer-consuming segments in the country--18 to 21-year olds. How much these factors affect the demand for rice by brewers is unknown; not all brewers use rice in beer production. But slower sales, evidenced by an aging population, may indeed slow the growth of rice demanded in beer brewing.

Table 1.--Estimated supply and disappearance by type of rice

Item	Unit	1982/83	1983/84	1984/85
Total rice				
Area harvested	Mil. acres	3.262	2.169	2.782
Yield	Pounds	4,710	4,598	4,926
Carryin 1/	Mil. cwt	49.0	71.5	46.9
Production	Do.	153.6	99.7	137.0
Total supply 2/	Do.	203.3	171.9	185.0
Domestic use	Do.	54.0	50.1	54.0
Exports	Do.	68.9	71.1	62.0
Residual	Do.	8.9	3.8	5.0
Total Use	Do.	131.8	125.0	121.0
Carryover 1/	Do.	71.5	46.9	64.0
CCC	Do.	22.3	25.0	47.0
Free	Do.	49.2	21.9	17.0
Season average price	Dol./cwt	8.11	8.50	8.00-8.50
Long				
Area harvested	Mil. acres	2.175	1.560	2.12
Yield	Pounds	4,293	4,169	4,586
Carryin 1/	Mil. cwt	17.6	25.8	16.4
Production	Do.	93.4	65.0	97.4
Total supply 2/	Do.	111.5	91.4	114.7
Domestic use 3/	Do.	38.7	30.1	35.0
Exports	Do.	47.0	44.8	45.0
Total Use	Do.	85.7	74.9	80.0
Carryover 1/	Do.	25.8	16.4	34.7
Season average price	Dol./cwt	8.74	9.00	8.65-9.00
Medium/short				
Area harvested	Mil. acres	1.087	.609	.66
Yield	Pounds	5,539	5,696	6,019
Carryin 1/	Mil. cwt	30.2	44.7	28.8
Production	Do.	60.2	34.7	39.7
Total supply 2/	Do.	90.6	79.6	68.7
Domestic use 3/	Do.	24.2	24.6	24.0
Exports	Do.	21.9	25.4	18.0
Total Use	Do.	46.1	50.1	42.0
Carryover 1/	Do.	44.7	28.8	26.7
Season average price	Dol./cwt	7.09	7.50	6.60-7.10

Numbers may not add due to rounding. 1/ Stocks of total rice include broken kernels, which are not included in the breakdowns of rice by type. Thus, the sum of long and medium/short grain rice carryover will not add to the total carryover; the difference is stocks of brokens. 2/ Supply includes imports. 3/ Domestic use includes residuals.

U.S. Exports Hampered by Tough Competition, a Strong Dollar, And U.S. Loan Rates

U.S. rice exports are still on a slide with no bottom in sight—at least for the near term. The competition from Thailand, once thought to be a temporary phenomenon owing to a couple of good crops, shows no signs of abating. Twice since November 1984, the Thai currency has been devalued against a simultaneously appreciating U.S. dollar, widening the trade gulf between Thai and U.S. rice to more than \$200 a ton. And despite a 5-percent decline forecast for Thailand's 1984/85 rice crop, exports are expected to remain above 4 million tons (milled basis), soaking up a greater share of a smaller 1984/85 world rice market. In fact, Thailand's 37-percent share of 1984/85 trade is expected to more than double the U.S. share of 17 percent. In 1980/81, the U.S. and Thai shares were both 23 percent.

Despite aggressive (and successful) efforts by Thailand—to export more rice, produce a higher-quality rice, improve its export reputation in world trade, and reduce a serious trade deficit by currency reevaluation—the U.S. export slide cannot be wholly explained by Thailand's actions. The loss of U.S. market share stems also from a deteriorating financial picture abroad, high U.S. loan rates, and market shrinkage.

Many of the strongest customers for U.S. rice (as well as U.S. farm products in general) have been developing countries. Mexico, Nigeria, and South Korea were the fastest-growing markets for U.S. agriculture during 1974–80. Two of these—Nigeria and South Korea—were also among the largest customers for U.S. rice. From 1974 through 1980, these two countries purchased 2.4 million metric tons of U.S. milled rice, or about 13 percent of total U.S. milled rice exported during that period. But many other developing countries also were among the first to find themselves in serious debt problems during the global recession of 1981–83. The result was a choking-off of U.S. exports, in part because of increases in the value of the U.S. dollar.

In the late 1970's through 1980, the rate of inflation soared while the trade-weighted value of the U.S. dollar declined. Measured by

changes in the Consumer Price Index (CPI), inflation rose from a decade-low of 5.8 percent in 1976 to 11.3 percent by 1979, and exploded to more than 26 percent in 1980, just as 1981 farm bill deliberations were coming to the fore. At the same time, the value of the U.S. dollar had declined steadily since 1976, falling almost 20 points by 1980, when it equaled 83 percent of its 1976 value.

In retrospect, it appears that U.S. farm policy drafted in 1981 probably complemented the economic environment as it appeared then. Favorable terms of trade, led by a cheap dollar abroad and price expectations fueled by double-digit inflation, made the legislated loan rates appear modest. But the economic environment was about to change drastically, as the Administration moved to quash inflation.

Effectively reducing inflation resulted in a farm sector saddled with programs (and signals) designed to accommodate inflation, but the United States, followed by the rest of the world, moved into a recession. Moreover, growth in the 1970's in the U.S. farm sector and foreign imports was financed largely by debt. And as inflation declined, real interest rates rose. U.S. farmers found themselves squeezed from both ends—rising production costs led by increased interest expenses, and low farm prices as demand for U.S. exports evaporated.

OUTLOOK FOR 1985/86

More of the Same

The 1985 rice crop will be the final harvest under the 1981 Agriculture and Food Act. Accordingly, the outcome of the 1985/86 season will set the stage for the initial effectiveness of upcoming legislation.

The 1985 rice program calls for participants to comply with a 20-percent ARP and a 15-percent cash land diversion (CLD) to be eligible for price and income support benefits of an \$8-per cwt loan rate, an \$11.90–target price, and a diversion payment rate of \$3.50 per cwt. The incentives provided by the 1985 program in the current climate of demand make the program very attractive. A quick glance at gross receipts less cash expenses for long grain rice producers indicates the participant would gain over the

nonparticipant by a ratio of more than 2 to 1 (table 2). Gross receipts from all sources less cash and conservation expenses for 100 base acres would net a participating long grain producer \$19,313, compared with \$8,750 for the nonparticipant. For the participant, Government payments in this example represent 33 percent of total receipts, but 74 percent of net cash returns. However, the substantial Government payments also mean many farms would hit the \$50,000-payment limitation quickly. In this example, 100 acres would earn \$14,325 in Government payments; it would take about 350 acres to reach the payment limitation. However, since most farms have multiple eligible farmers, the payment limit is not expected to significantly reduce the total payments that could be made under the 1985 program.

Spring planting intentions, released in mid-February, provide some early clues to producers' assessment of the coming season and their response. According to the report, U.S. rice producers gave intentions to plant just under 2.5 million acres for the 1985/86 rice crop, down 12 percent from 1984. Perhaps the most interesting point of the intentions report is not the absolute number of acres, but their distribution by type of rice. The report shows producer intentions to plant

1.97 million acres, or 80 percent of the total, to long grain rice, a record share for long grain. If rice producers do indeed plant 2.468 million acres this year, the 1985 rice crop, based on historical data, would be approximately 90 percent of the 1984 crop. However, the 1985 rice crop could exceed estimates based on historical data, depending on area planted to high-yielding long grain rice.

1985 FARM LEGISLATION: PERSPECTIVES FOR U.S. RICE

Since current farm legislation expires with the 1985 rice crop, it is appropriate to consider what new legislation may be in store for the farm sector, and especially for U.S. rice producers.

Why the Need for Change?

Why does the Administration propose such a dramatic change in course for the farm sector? Primarily because of its belief that current farm programs are counter to the course set for the general economy. According to the Administration, current programs, rather than solving farm problems, have contributed to the excess-capacity problems facing U.S. agriculture. A case in

Table 2.--Rice returns under the 1985 rice program for participants versus nonparticipants.

Item	Unit	Participant	Nonparticipant
Base area	Acres	100	100
Planted area	Do.	65	100
Harvested area	Do.	65	100
Average yield	Cwt/acre	50	50
Production	Cwt	3,250	5,000
Expected price 1/	Dollars/cwt	8.95	8.95
Deficiency rate 2/	Do.	3.60	0.00
Diversion rate	Do.	3.50	0.00
Market value	Dollars	29,088	44,750
Deficiency payments	Do.	11,700	0
Diversion payments	Do.	2,625	0
Gross receipts	Do.	43,413	44,750
Per acre cash expenses	Dollars/acre	360	360
Conservation costs	Do.	20	0
Total cash expenses	Dollars	24,100	36,000
Cash returns	Do.	19,313	8,750

1/ Assumes a long grain producer, receiving the 1984/85 average price. 2/ Assumes deficiency payment rate based on 5-month average farm price for all rice, estimated at \$0.30 to \$0.40 below season average price. The 5-month average is assumed to be the same as 1984/85--\$8.30 per cwt.

point is loan rates that prevent price adjustments from occurring: exports decline, stocks build, farm prices decline, and Government program costs soar.

The rice program used to be small in terms of direct Government payments. But in recent years, there has been a sizable increase in the portion of producer income attributable to Government sources. This visibility--of direct payments relative to farm income--is one of the catalysts responsible for the Administration's efforts to redesign farm programs, including those for rice. Since the inauguration of target prices with the 1976 rice crop, direct Government payments have made up an increasing share of producer incomes. In 1982, Government payments comprised 18 percent of rice growers' incomes; a year later, they comprised 42 percent. The benefits of participating in the rice program are evident in comparing returns in 1982 and 1983, even though producers were required to idle land in both years to receive program benefits (table 3).

Let's use 1982 and 1984, excluding the PIK program in 1983, as examples to show how the U.S. rice sector benefits from the program even if acreage reductions are required. In 1982, farmers idled 422,000 acres from rice production to be eligible for program benefits. Had those acres been in production,

another 20 million cwt may have been harvested. In 1984, farmers idled 785,000 acres, foregoing production of approximately 39 million cwt.

Valued at the prevailing loan rates for both years, farmers could have received \$163 million in additional gross revenue from production on idled land in 1982, and \$300 million in 1984. Subtracting variable cash expenses for both years, the foregone net revenue from program participation is estimated at \$62 million in 1982, and \$104 million in 1984. But Government deficiency payments totaled \$267 million for rice produced under the 1982 program and \$376 million under the 1984 program. Thus, producers received a combined gain for both years of approximately \$475 million (\$205 million in 1982 and \$270 million in 1984).

Economic and Fiscal Climate

In addition to the perception that program costs, for rice as well as other commodities, have risen to an intolerable level, one other pressing characteristic of the current economic climate is the dominance of the Federal deficit and the consequent need to reduce expenditures. For farm bill deliberations, this introduces a primary objective into the legislative process: accomplish farm policy objectives in a

Table 3.--Rice returns above cash costs, with and without direct Government payments, 1976-83 1/

Crop year	Net returns, 1972\$ 2/				Direct payments as of share of	
	Without direct payments		With direct payments		Farm value	Net returns
	\$/cwt	\$/acre	\$/cwt	\$/acre	Percent	
1976	1.41	65.57	2.25	104.44 (93.56) 3/	15.8	37.2
1977	2.59	113.69	2.62	114.95 (114.70) 3/	.4	1.1
1978	2.06	91.74	2.35	104.84 (99.60) 3/	5.4	12.5
1979	3.01	137.42	3.01	137.63 (137.55) 3/	0	.1
1980	3.08	133.32	3.09	133.65 (133.49) 3/	.1	.2
1981	.93	44.27	.99	47.35 (45.72) 1/	1.3	5.9
1982	.26	12.20	1.11	51.42 (43.70) 4/	21.4	76.3
1983	.43	19.66	3.33	152.90 (76.40) 4/	72.3	87.1
Average	1.72	77.23	2.34	105.89		

1/ See September 1984 Rice Situation (RS44) for explanation of net returns. 2/ Net returns are deflated, where 1972 = 1.0. 3/ For 1976 through 1981, producers received payments only for production from allotments. However, they were not penalized for production above allotted acreage. Assuming producers planted their full allotment, the numbers in parentheses represent net returns based on allotments plus excess production. 4/ Net returns reduced to reflect compliance required for program benefits--a 15-percent ARP in 1982 and a 50-percent ARP, including a 10- to 30-percent PIK, in 1983.

least-cost manner. Historically, farm policy objectives were presumed to be best achieved through the transfer of income (sometimes sizable). The current tone modifies this somewhat, suggesting that support for the farm sector should be limited; part of farm policy objectives, as well as overall economic recovery, can be best achieved through individual efforts within a free market. Given the problems of the past 4 years with a set of farm programs that were mismatched with global and domestic economic conditions, there is a growing dissatisfaction with current Government programs. Thus, the stage is set to consider non-Government alternatives and to reduce the role of Government in U.S. agriculture.

The Possibilities: From Fine-Tuning to Sweeping Reform

Broadly speaking, there are four possible changes to make when current legislation expires:

- o Do nothing and simply let current legislation expire;
- o Fine-tune the current legislation;
- o Repeal all farm programs immediately upon expiration of the current law;
- o Provide a transition period to achieve a market driven farm sector free of Government programs.

With the exception of the last option, the specifics of each are fairly self-explanatory. The last option most closely resembles the Administration's current proposal, and could include:

- o a changing of average target prices and loan rates;
- o graduated target prices, adjusted on a moving average basis;
- o recourse rather than nonrecourse loans, or a combination of both with ceilings imposed;
- o severely constrained use of acreage reduction or cash diversion measures;
- o benefit eligibility tied to compliance with conservation measures;
- o export-promotion measures.

Outcomes of the Options

With the exception of simply fine-tuning current legislation, the four options imply lengthy adjustment periods for the farm sector.

At first glance, permitting the current legislation to expire sounds radically market-oriented. However, many commodities would actually be subject to more production-decision interference than under the present law. Letting the 1981 Act expire would mean a reversion to permanent legislation—devised for the most part in the 1930's and 1940's. Price supports would be reunited with parity, allotments would reappear, and quotas would be in force. For rice, however, support would be at the discretion of the Secretary of Agriculture, since price and income support legislation was repealed with passage of the 1981 Act. The consequences of reverting to permanent legislation would be today's problems magnified many times: huge outlays, large stocks, overproduction, excess capacity, and loss of markets.

Fine-tuning the current law reflects a belief that the present problems are only temporary, not a result of structural (and therefore, permanent) changes that have occurred in domestic and international markets. Unexpected good crops of competing exporters or importers may indeed be temporary; new technology rarely is. Maintaining the "status quo" by fine-tuning the 1981 Act in the face of ongoing structural adjustments is, many believe, like watching a slow-motion process of reverting to permanent legislation.

For U.S. rice, assuming the shift to new high-yielding long grain varieties is permanent, fine-tuning could mean acreage reductions on the order of 50 percent every year as yields increase and demand remains weak. That's the equivalent of running a PIK program without an in-kind payment. At current prices, supported by the loan rate, the new rice technology would mean that within just a few years, the Commodity Credit Corporation (CCC) could wind up owning the equivalent of two to three rice crops, even with only half the current acreage base in rice production.

Repealing all farm programs immediately upon expiration of the 1981 Act is an extreme option, one that would cause more problems than it solves. The resource adjustment that would occur as a consequence could severely disrupt the farm sector, greatly disturbing the rest of the U.S. economy as well as international markets.

The Agricultural Adjustment Act of 1985

The Agricultural Adjustment Act (AAA) of 1985 is designed to set U.S. agriculture on a path toward market orientation, yet provide a reasonable transition period for the farm sector to make the necessary adjustments. A unique provision of the AAA is an explicit trade promotion title; this, together with the transition toward a market-driven farm sector, should enable efficient U.S. farmers to challenge competitors in world markets rather than bear a disproportionate share of the adjustments to world market developments.

The basic objectives of the proposed 1985 Act as expressed by the Administration include:

- o Long term agricultural policy--the AAA focuses on creation of a stable and predictable long term environment to enhance realistic production and investment decisions. Several provisions in the bill extend to the year 2000.
- o Market orientation--price and income support are tied to a moving average of past market prices. Farmers are provided a 5-year transition period for adjustments to be able to respond to market signals rather than the Government.
- o Enhanced U.S. competitiveness--provisions of the AAA should permit farmers to actively respond to changes in world market conditions rather than suffer the consequences of lost markets as a result of being trapped by protectionist price and income policies.
- o Equity and consistency--the AAA would place all producers of program commodities on an equal footing, by providing the same kind and level of support, and the same transition period across all commodities.
- o Budget restraint--the AAA recognizes and incorporates into its provisions the need to be compatible with general fiscal policy by exercising cost control over farm programs. The AAA is

estimated to cost less than half as much as the continuation of current programs over fiscal years 1987 through 1991.

Cotton, Soybean, and Rice Provisions

Essentially, provisions covering rice, cotton, and soybeans are similar to those for other commodities, but this Outlook and Situation will focus on those commodities of most interest to rice producers in the southern States. Cotton and soybeans are included because of their importance in rice-producing regions.

For cotton and rice, producers will continue to be eligible for loans and income supports through the target price-deficiency payment concept. Loan levels would be set each year, beginning with the 1986 crops, at 75 percent of the preceding 3-year average of market prices. A moving average, the 1986 loan rate would then be equal to 75 percent of the season average farm price in 1983, 1984, and 1985. Target prices in 1986 begin as 100 percent of the preceding 3-year moving average of market prices. They then decline by 5 percent each year until 1991, when they are also 75 percent of the 3-year moving average market price. Thereafter, target prices and loan rates are held at the 75-percent level.

Table 4.--Estimated national average target prices and loan levels for all rice under the Agricultural Adjustment Act of 1985

Crop year	Target price 1/	Loan rate 2/
Dollars per cwt		
1986/87	8.50	6.37
1987/88	7.03	5.55
1988/89	5.85	4.87
1989/90	4.87	4.30
1990/91	4.72	4.42
1991/92	4.57	4.57

1/ Based on declining percentages of the average of the preceding 3 years' season average market prices: 100 percent in 1986/87, declining by 5-percent until 1991/92, when they reach 75 percent.

2/ Computed as 75 percent of the average of the preceding 3 years' season average market prices.

Eligibility for deficiency payments under the AAA would require (as in current legislation) compliance with voluntary acreage reduction programs in 1986, 1987, and 1988. For the 1989 and succeeding crops, authority for acreage reduction and other supply control programs would be eliminated.

The soybean program would continue to rely solely on loans, but the loan rate would be determined in the same manner as for rice. In the past, the soybean loan rate was determined as 75 percent of the preceding 5 years' moving average of market prices, excluding the high and low, with a legislated minimum. The AAA would change this to a 3-year average, with no specified minimum.

Loans will be available for all commodities on a 9-month basis, and nonrecourse loans will be available, subject to a limit of \$200,000 per operator for all commodities on all farms in which the producer has an interest. Loans in excess of \$200,000 will be recourse loans only. For both cotton and rice, differential loan rates will be made available as in the past: the AAA provides for establishing separate target prices and loan rates by type of rice based on market prices and continuing separate loans and targets for upland and extra-long staple cotton.

Voluntary acreage reduction programs will be offered at the following levels for all program crops: 15 percent for the 1986 crop, 10 percent for the 1987 crop, and 5 percent for the 1988 crop.

There are two very different provisions in the AAA for price and income support. One deals with the computation of deficiency payments. In the past, deficiency payments for rice were computed as the difference between the target price and the loan rate or the 5-month (August–December) average of market prices, whichever was higher. Under the AAA, the deficiency payment rate would be equal to the difference between the target price and the season average price for eligible production not placed under loan or placed under recourse loan. The rate for rice under nonrecourse loan could not exceed the difference between the target price and loan rate.

Use of season average price to calculate the payment rate reflects thinking that the

present calculation of deficiency payment rates is inaccurate in that only part of producers' crops is marketed during an early harvest period. Moreover, the present calculation was more relevant when deficiency payments were not made in advance. But with advance deficiency payments, there is no need to compensate producers for harvesttime low prices later in the season. Thus, under the AAA, payments would be made at the end of the season; current programs provide payments at planting time. The second major difference is that support would be provided by class of rice. Long grain rice would have its own target and loan rate, separate from medium/short grain.

The Administration's farm bill would take effect with the 1986 rice crop. The program facing a rice producer would contain several new provisions. Producers would have to comply with a 15-percent acreage reduction program to receive program benefits. There would be separate long grain and medium grain target prices for 1986, based on the average of the 3 preceding years' prices for long and medium grain rice. In 1983/84, the long grain average farm price was \$9.54 a cwt; the medium grain price was \$7.37 a cwt. Using the midpoint of the USDA forecast ranges for both rice types in 1984/85, and assuming the same for 1985/86, the long grain target price in 1986/87 could range from \$9 to \$10, while the medium grain target might range from \$6.50 to \$7.50. Loan rates, using the 75-percent formula, could range from \$6.50 to \$7.50 for long grain, and \$4.75 to \$5.75 for medium grain.

WORLD OUTLOOK AND SITUATION

Global rice production in 1984/85 is forecast at 465 million metric tons (rough basis), 3 percent greater than a year earlier, and 11 percent higher than 1982/83. But global consumption may increase by less than production, causing total ending stocks to rise.

Overall, ample supplies in major importing countries are expected to result in sharply lower world rice trade during calendar year 1985, while prices weaken as exporters find themselves with sizable surpluses. World milled rice trade is forecast at 11.6 million tons in calendar 1985, compared with 12.5 million in 1984.

*Major Importers: Ample Supplies
Lower Demand*

Forecasts of a large Indonesian rice crop of 38 million tons (compared with a previous 4-year average of 33 million), means only limited import demand by Indonesia. Forecast imports of 50,000 tons are expected to be filled by high-quality and specialty rice. In past years, the United States has often been a major Indonesian rice supplier, but 1984/85 exports may only total 10,000 tons. Moreover, Indonesia is expected to re-export 100,000 tons of lower-quality Taiwanese rice to the Philippines.

Forecast imports by Sri Lanka were raised to 100,000 tons, reflecting the Government's intentions to add to buffer stocks. Purchases are expected to come entirely from China, which has ample stocks for exports.

Highlights for 1985 imports by other countries shape up as follows: 1 million tons by the European Community (EC); 700,000 tons by Iran (reportedly to come from Thailand in exchange for oil); 200,000 tons by Brazil, to cover domestic declines as farmers switch to soybeans; and 500,000 tons by Iraq, most of which is expected to come from the United States, although Thailand continues to make inroads there. Iraq may buy 50-75,000 tons from Thailand, depending on credit negotiations. Nigerian rice imports may rise slightly from 450,000 tons in 1984 to 500,000 in 1985, but the United States is not expected to be a supplier.

*Major Exporters: Excess Supplies,
Weak Prices*

Around the world, rice prices continue to weaken as exporters find themselves with abundant supplies and weak import demand. Thai prices for 100-percent B rice dipped below \$200 a ton in late January. Other exporters were asking equally low or lower prices: Pakistan offered Punjab 10-percent broken for \$212 a ton, Burma offered 35-percent broken at \$174 a ton, Taiwan--25-percent long grain at \$175, and China--\$160 to \$170 for 35-percent broken.

Although Thailand's rice crop is forecast to decline from last year's 19.6 million to 18.5 million in 1984/85, exports are expected to dip only to 4.3 million tons during calendar year

1985. In early January, Thailand's prime minister met with farmers who were protesting current low paddy prices and making three demands: a guaranteed purchase price of 3,500 baht 1/ per ton for 5-percent paddy (the current purchase price is 3,000 baht); a freeze on fertilizer prices at 4,200 baht per ton (Thailand has one of the highest fertilizer-rice price ratios in Asia); and an extension on the Bank of Agriculture and Agricultural Cooperatives' (BAAC) debt payment deadline from March 31 to September 30, without interest.

Though the last demand was rejected by the BAAC, the Council of Economic Ministers was expected to increase the initial payment to farmers under the rice support scheme, from 50 to 75 percent of the support price. No method has yet been proposed for raising the support price, however. The Thai Board of Trade has asked the Government to eliminate the current system of export quotas, with support for the request from the Thai Farmers Bank, charging that the current system raises exporters' costs, favors large exporters, and does not encourage exporters to seek new markets.

In China, excess supply problems for grains have occurred. As a result, the Government has decided to abolish a longstanding system of agricultural quotas, and will now enter into contracts with producers for specific quantities of various commodities. In the past, the Government served as the guaranteed market for all production, paying a premium price for all above-quota production. Under the new policy, the Government will purchase contracted amounts of wheat, rice and corn at a guaranteed price which is about 10 percent below last year's price for above quota sales. Any production above the contract amount may be sold on the free market. Should the Government require further supplies, purchases will be made in the free market or with supplemental contracts. If, however, the free market price drops below the old quota price established in 1979, the Government will buy from the farmer at the old quota price. The old quota price, therefore, acts as a floor

1/ Recent quotes for Thai-U.S. exchange rates show that one U.S.\$ is equal to approximately 27 baht.

price, albeit a low one, for Government purchases.

Elimination of the quota/bonus system is not expected to have an immediate impact on rice production or exports. Decentralization of export control could have a greater impact on the level of rice exports. Large rice supplies and the ability of the provinces to export on their own authority without going through the central Government may result in

much larger volumes of rice moving in international trade. But with world trade expected to remain weak in the coming year, Chinese rice--because of its low quality--will require substantial price discounts to move large volumes. The Chinese Government agency, Ceroilfoods, is reportedly offering 35 percent brokens at \$175 a ton, whereas provinces have offered comparable rice at \$160 a ton. Chinese rice exports in 1985 are currently forecast at 900,000 tons.

U.S. Share of World Rice Market Declines 1/

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Abstract: Based on data obtained from the United Nations, the U.S. share of world rice imports declined from 25 percent in 1982 to 20 percent in 1983, and the share fell in 9 of 17 regional markets. Volume of U.S. rice exports declined as well, from 2.8 million tons in 1982 to 2.3 million in 1983, marking the second year of smaller exports and market shares. In 1981, the United States exported a record 3.4 million tons and supplied 26 percent of the world rice market.

Keywords: Market share, rice, exports, imports

Regional Highlights of U.S. Trade

During 1983, the U.S. share of world rice imports increased in Western Europe excluding the European Community (EC), Central America, South America, North and East Africa, West and Southeast Asia, and the Caribbean (table 5). The largest gains were in Central America, up 57 percentage points, and other Western Europe, up 23 points. 2/ The increase in market share was accompanied by a larger export volume to each of these regions except East Africa. In no region did U.S. rice exports increase while the market share declined.

These increased market shares were more than offset by decreases in the remaining regions. The U.S. share declined in North America (down 5 points), the EC (down 23), Southern Africa (down 2), West Africa (down

15), and the Pacific Islands (down 1). The most critical losses occurred in the EC, the United States' leading customer in 1982, and West Africa, where export volumes declined by 376,300 and 301,700 tons, respectively. In 1982, Thailand replaced the United States as the world's largest rice exporter.

Trends during 1978-83 yield the following observations about the U.S. performance in the world rice market. First, the U.S. share of rice imports in the Caribbean, Central and South America, and Eastern European markets is small relative to the U.S. share of other commodities, such as wheat or corn. Except for Eastern Europe, these markets are expected to be strong U.S. customers because of their geographic proximity. Second, the U.S. share in several regional markets appears highly correlated with imports of particular countries in those regions. For example, when countries such as South Korea, Indonesia, and Nigeria cut back their purchases, U.S. exports to their respective regions decline accordingly.

Changes in the Share of Top U.S. Competitors

Total world imports increased from 11.5 to 11.9 million tons from 1982 to 1983, with the largest increases occurring in Southeast Asia (up 779,600 tons), South Asia (up

1/ The data reported in this paper were compiled as part of IED's World Trade Project. The import data used to calculate the tables were derived from U.N. and country trade statistics and do not necessarily agree with estimates of the Foreign Agriculture Service of USDA, or with data provided by the Bureau of the Census. The import data are unique because they include origin and destination statistics for most countries of the world. In coming months, regional trade tables for the food and feed grains will be published in a series of IED statistical bulletins covering calendar years from 1962 through 1983.

2/ The term "percentage points" describes changes in market shares. When a market share declines from 50 to 40 percent, it has changed 10 percentage points, or 10 points.

466,500), South America (up 322,000), and West Africa (up 120,000). The United States made modest gains in Southeast Asia and South America, but lost market shares in West Africa and South Asia. Despite modest gains in some markets, 1983 was a year of lost opportunities for the United States.

Among the top six rice exporters, only Pakistan and Taiwan benefited from the expanding world rice market in 1983.

Pakistan's share of the world market increased from 9 percent in 1982 to 17 percent in 1983, and Taiwan's share increased from 1 to 6 percent. Pakistan gained a larger share in Eastern Europe, South America, West Asia, and Africa generally. Taiwan's share rose in all markets where it had exported in 1982, except North Africa. These markets included South America, South, East, and West Africa, South and Southeast Asia, and the Pacific Islands.

Although other competitors made regional gains, their world market shares remained more or less stable in 1983. Regional gains were not, however, equally shared. Taiwan and the United States were the only major

traders to gain from expansion of the Southeast Asian market--Thailand actually lost a proportion of this market. Growth in South Asia's market benefited Thailand and Taiwan, but the United States and Pakistan both lost some of their 1982 share. Only Pakistan gained a larger share of the West African market. Only in South America were increased imports shared among major exporters.

The large market shares of India in 1982 and Taiwan in 1983 illustrate another important characteristic of world rice markets. Among Asian exporters, rice exports represent a relatively small share of domestic rice production. In 1983, for example, Indian and Taiwanese exports were less than 1 percent of domestic production. Even in Thailand and Pakistan, the world's first and third largest exporters in 1983, exports represented less than 20 percent of domestic production. 3/ This relationship between production and trade makes it possible for countries like India and Taiwan to become major traders in world rice markets in a single year.

3/ Food and Agricultural Organization of the United Nations, *Production Year Book*, Rome, Italy, 1983.

Table 5.--U.S. market share in regional rice markets, 1978-83

Region	1978	1979	1980	1981	1982	1983
Percent						
North America	97	97	96	92	84	79
EC-10	33	38	41	31	48	25
Other Western Europe	39	47	36	20	21	44
Eastern Europe	4	7	2	1	0	0
USSR 1/	2/	2/	0	0	0	2/
Central America	15	35	52	15	19	76
South America	5	16	16	34	25	31
Brazil 1/	2/	0	2/	2/	2/	2/
Caribbean	15	11	18	26	23	24
North Africa	11	8	4	10	6	23
South Africa	28	34	31	33	26	24
East Africa	53	17	20	13	22	27
West Africa	33	19	25	34	28	13
Nigeria 1/	40	2/	2/	2/	53	18
West Asia	46	44	35	29	33	34
South Asia	25	6	1	1	14	5
East Asia	1	7	47	36	24	29
Korea, Rep. 1/	2/	2/	74	46	2/	2/
Southeast Asia	16	9	9	6	1	4
Indonesia 1/	21	13	11	2/	2/	6
Oceania	17	14	14	19	23	14
Pacific	8	10	9	10	12	11
World share	26	22	24	26	25	20
Thousand metric tons						
Total exports	2,595.0	2,551.9	2,983.0	3,360.0	2,832.3	2,342.8

Data are not official and do not necessarily agree with U.S. Department of Agriculture or Bureau of the Census.

1/ These countries accounted for more than 5 percent of total world imports in the years cited. For example, the USSR claimed more than 5 percent of world rice imports in 1980, 1981, and 1982, but none of its imports came from the United States. 2/ These countries accounted for less than 5 percent of total world imports in the years indicated. For example, the USSR received less than 5 percent of world rice imports in 1978, 1979, and 1983.

Source: United Nations trade data supplemented by official country trade statistics.

Table 6.--U.S. rice exports by region, 1978-83

Region	1978	1979	1980	1981	1982	1983
Thousand metric tons						
North America	82.6	91.3	94.8	103.4	109.9	103.4
EC-10	463.0	440.7	453.2	383.7	698.5	322.2
Other Western Europe	61.5	106.3	66.5	44.0	67.1	88.5
Eastern Europe	26.9	57.8	17.5	15.4	1.0	0.0
USSR 1/	2/	2/	0.0	0.0	0.0	2/
Central America	3.3	22.3	74.9	16.6	6.2	45.1
South America	5.5	154.9	86.6	93.5	61.2	176.0
Brazil	2/	2.2	2/	2/	2/	2/
Caribbean	47.4	33.2	72.4	110.8	83.7	91.7
North Africa	6.9	5.5	3.1	7.6	5.0	26.4
South Africa	121.3	154.3	121.0	141.5	203.9	184.9
East Africa	45.2	11.4	46.7	23.4	68.1	64.6
West Africa	446.1	315.2	371.8	580.0	570.3	268.6
Nigeria 1/	226.0	2/	2/	2/	343.1	124.2
West Asia	704.7	825.4	606.6	517.9	601.8	635.3
South Asia	138.5	17.2	9.5	3.1	55.6	41.5
East Asia	5.0	52.1	673.6	1,192.3	2664	201.3
Korea, Rep. 1/	2/	2/	672.1	1,191.2	2/	2/
Southeast Asia	425.7	249.6	269.9	112.0	14.9	75.5
Indonesia 1/	391.4	241.0	2230	2/	2/	73.8
Oceania	1.2	1.2	1.2	1.6	2.3	1.8
Pacific	10.2	13.5	13.9	13.8	16.4	16.0
Total exports	2,595.0	2,551.9	2,983.0	3,360.6	2,832.3	2,342.8

Data are not official and do not necessarily agree with U.S. Department of Agriculture or Bureau of the Census.

1/ These countries accounted for more than 5 percent of total world imports in the years cited. For example, the USSR claimed more than 5 percent of world rice imports in 1980, 1981, and 1982, but none of its imports came from the United States. 2/ These countries accounted for less than 5 percent of total world imports in the years indicated. For example, the USSR received less than 5 percent of world rice imports in 1978, 1979, and 1983.

Source: United Nations trade data supplemented by official country trade statistics.

Table 7.--Share of the top U.S. competitors in the world rice market 1/

Region:	Thailand		Pakistan		Italy		China (PRC)		India	Taiwan
	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983
Percent										
North America	12	14	0	0	1	1	1	0	2	0
EC-10	3	10	0	0	19	20	0	0	2	0
O.W. Europe	2	4	0	0	10	15	0	1	0	0
Eastern Europe	6	9	8	14	3	2	7	20	51	0
USSR 2/	2	3/	9	3/	0	3/	0	3/	64	0
C. America	0	0	0	0	3	16	31	0	0	0
S. America	0	13	0	14	0	4	0	5	0	4
Caribbean	6	13	21	20	1	1	6	1	0	0
North Africa	18	16	8	16	56	16	0	3	0	6
S. Africa	44	25	2	3	5	9	6	6	2	15
East Africa	39	19	3	14	12	8	0	1	0	1
West Africa	41	35	17	43	2	1	3	1	0	2
Nigeria 2/	30	29	13	51	0	0	0	0	0	0
West Asia	29	25	17	26	4	6	3	3	4	0
South Asia	16	28	33	15	0	0	0	0	3	11
East Asia	45	35	0	0	0	0	21	27	0	0
S.E. Asia	67	47	8	8	0	0	1	0	0	21
Indonesia 2/	3/	29	3/	3	3/	0	3/	0	3/	34
Oceania	15	29	4	3	0	1	1	0	0	0
Pacific	6	3	0	0	0	0	0	0	0	1
World share	29	27	9	17	5	5	5	4	6	6
Million metric tons										
Total exports	3.3	3.2	1.1	2.0	.6	.6	.5	.5	.7	.7

Data are not official and do not necessarily agree with U.S. Department of Agriculture or Bureau of the Census.

1/ The fourth largest world exporter was India in 1982 and Taiwan in 1983. Between these two countries, only India has been one of the top 6 exporters twice since 1978. In 1981, India exported 974,800 metric tons and had a market share of 7.4 percent. 2/ These countries accounted for more than 5 percent of total world imports in the years cited. For example, the USSR claimed more than 5 percent of world rice imports in 1982, and the top suppliers of those imports were Thailand, Pakistan, and India. 3/ These countries accounted for less than 5 percent of total world imports in the years indicated. For example, the USSR received less than 5 percent of world rice imports in 1983.

Source: United Nations trade data supplemented by official country trade statistics.

ASIAN RICE ELASTICITIES

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Warren R. Grant 1/

Abstract: Rice supply and demand are generally very price inelastic, but negative income elasticities in Asian rice exporting countries indicate that consumers in those countries are satisfied with current amounts of rice consumption, and that rice consumption decreases as incomes increase. Thus, as incomes in these countries rise, more rice could be available for export, posing an even greater challenge to the U.S. rice industry in the world rice market.

Key words: Asia, rice, elasticity, production, consumption.

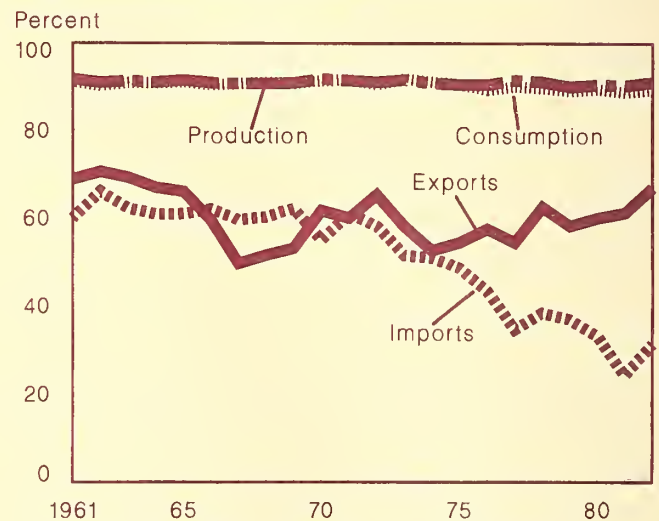
Introduction

The world rice economy has grown significantly over the last two decades. Milled rice production increased by 102 percent, from 155 million metric tons in 1962/63 to 314 million in 1984/85. Asia is a critical component of the world rice economy, with more than 90 percent of world production (fig.2). However, Asia's share of world rice consumption has gradually decreased from 91 percent in 1975/76 to 89 percent in 1981/82. Consequently, a growing share of Asian rice production is available for export. Although there was no substantial growth prior to 1976, total world rice exports rose 56 percent from 8.4 million tons in 1976 to 13.1 million in 1981, before declining to 12.3 million in 1984. Exports by Asia increased 66 percent over this period, from 5 to 8 million tons. Asia's share of world rice exports also grew, from 58 percent in 1976 to over 61 percent in 1981. At the same time, the share of world rice imported by these Asian countries declined substantially (fig. 2).

Using annual data for 1962 through 1981, production and consumption relationships were estimated for eleven countries: Bangladesh, Burma, People's Republic of China (PRC), India, Indonesia, Japan, South Korea, Pakistan, the Philippines, Thailand, and Taiwan. During 1977-81, these countries accounted for 84

Figure 2

Asian Share of World Production, Consumption, Export, and Imports^{1/}



^{1/} Production and consumption are marketing year data, beginning 1961/62. Exports and imports are calendar year data, beginning 1962.

percent of world rice production and 82 percent of world rice consumption. Results from the analysis provide information on production and consumption elasticities for Asian rice economies. 2/ Similar data for the United States (3) are reported for comparison.

In the analyses for production models, government prices were used for Burma, India,

2/ Elasticity is the percentage change in one item related to a one-percent change in another item, other variables held constant. For example, a 0.3 price elasticity for yield means that a one-percent increase in price causes yields to increase by 0.3 percent. Short run elasticity, in this paper, refers to the percentage change in one year. Long run elasticity, in contrast, refers to the cumulative percentage change over the adjustment period.

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Indonesia, Japan, Pakistan, the Philippines, and Taiwan. Market prices were used for Bangladesh, South Korea, and Thailand. For the consumption models, domestic retail or wholesale prices were used for all countries except PRC and Indonesia. Thailand's export prices were used for these two countries.

Short Run Production Elasticities

Burma, Pakistan, Thailand, and the United States showed no yield response to a change in price. Thus, their price elasticities for yield were estimated at zero. Bangladesh, India, Indonesia, Japan, South Korea, the Philippines, and Taiwan exhibited yield response to a price change, with elasticities ranging from a high of 0.456 in Japan to a low of 0.049 in Bangladesh (table 8). Thus in Japan, a 0.456-percent change in yield was associated with a 1-percent change in price in the same direction, whereas in Bangladesh, a 1-percent change in price elicited only a 0.049-percent change in yield. Subsistence producers in countries like Bangladesh do not respond to price changes as readily as producers in Japan, where government programs and environmental restrictions influence response.

In each country showing statistically significant price responses for both changes in yield and area harvested, the price elasticity for yield was larger than the elasticity for area harvested. Yield response to price was affected indirectly, based on changes in acreage harvested. Acreage increases should have a negative impact on yields because capital and human resources are limited and marginal land is often used for additional acreage. This response was not detected in any of the countries except Japan and Taiwan. The elasticity of yield with respect to harvested acreage ranged from -0.156 in the United States to -0.674 in Taiwan (table 8). Acreage affected yield in those countries that have production limitation programs: Japan, Taiwan, and the United States.

Previous research indicated rice acreage elasticities were very inelastic (1, 2, 5, and 6). Ito's study supports the inelastic character of rice acreage for even more recent periods in Asia. The acreage elasticities reported here are less than 0.1, except for the Philippines (0.116) and Thailand (0.337). In most Asian countries, cropland suitable for rice production traditionally produces rice.

Price elasticities for total production were calculated based on the three preceding types of elasticities. The formula used was:

$$E_{q/p} = E_{yd/p} + E_{a/p} (1 + E_{yd/a})$$

where:

$E_{q/p}$ = price elasticity for production;

$E_{yd/p}$ = price elasticity for yield;

$E_{a/p}$ = price elasticity for area harvested;

$E_{yd/a}$ = area harvested elasticity for yield.

Elasticities, which were not identified statistically, were regarded as zero under the formula. The largest production elasticity for the short run was 0.485 for Japan, followed by 0.447 for South Korea, 0.337 for Thailand, and 0.313 for the Philippines (table 8). Because of the relatively large price elasticities of yield, the production elasticities were relatively large for Japan, South Korea, and the Philippines. However, Thailand's relatively large production elasticity was due to an acreage response to price changes. The production elasticities for other countries remained very inelastic. Elasticity estimates for the United States were similar to these other Asian responses.

Long Run Production Elasticities

No long run yield response to a change in price was detected for most Asian countries. However, Indonesia and the Philippines exhibited lagged response with elasticities at 0.269 and 0.355, respectively (table 9). The cumulative effects of a price change took 2.83 years in Indonesia and 1.8 years in the Philippines.

Adjustments in area harvested to a price change usually take more than 1 year for the full impact to occur. Adjustment periods varied from 1 year in Burma, Indonesia, and the Philippines to 4.81 years in Thailand. However, most long run acreage elasticities were relatively inelastic except for Thailand (1.62).

Long run production elasticities, which were calculated with the same formulas as the short run production elasticities, varied with the country. In Thailand, due to the absence

Table 8.--Short run elasticities of rice yield, area harvested, and production in Asia and the U.S.

Countries	Yield ($E_{yd/p}$)	Acreage effect on yield ($E_{yd/a}$)	Area Harvested ($E_{a/p}$)	Production (1) ($E_{q/p}$)
Bangladesh	.049*	---	.011	.060
Burma	---	---	.043**	.043
India	.156**	---	.027	.183
Indonesia	.094**	----	.074*	.168
Japan	.4568	-.490*	.058**	.485
South Korea	.396**	---	.051*	.447
Pakistan	---	---	.091	.091
Philippines	.197*	---	.116*	.313
Thailand	---	---	.337*	.337
Taiwan	.119*	-.67*	.059	.138
United States	---	-.156*	.125*	.110

* = 5% level significance

++ = 10% level significance

(1) $E_{q/p} = E_{yd/p} + E_{a/p} (1 + E_{y/a})$

Source: Grant et al., Ito

of a yield response to a price change, the long run acreage elasticity (1.62) was regarded as the long run production elasticity. Japan, South Korea, and the Philippines were near 0.5. India, Indonesia, Pakistan, and Taiwan exhibited a slightly lower price response, while Bangladesh and Burma remained very inelastic. The long run production elasticity for the United States was estimated at 0.311.

Consumption Elasticities

In most Asian countries, rice consumption is influenced by production immediately preceding a given consumption period. Japan and Taiwan are exceptions, in that they have adequate storage facilities. Price elasticities for consumption with respect to domestic prices were very inelastic in this region, ranging from -0.026 in Burma to -0.17 in the Philippines (table 10). Elasticities with respect to the Thai export price were -0.005 for the PRC and -0.046 for Indonesia. The PRC exports rice at the expense of domestic consumers when the world rice price is high. Indonesia, on the other hand, cannot supply domestic consumers with satisfactory amounts

of rice at a reasonable price when the world price is high. The elasticity of the PRC seems almost negligible. However, as the world's largest rice producing and consuming country, changes in its export levels can be dramatic on the world rice market.

No effect of domestic price on demand was found in India, Indonesia, Japan, and Thailand. However, given that rice is a staple food in Asia and that elasticities for other Asian countries are very inelastic, it is assumed that the elasticities for those four countries may also be very inelastic or close to zero. The elasticity of per capita domestic food demand with respect to retail price in the United States was -0.18, slightly higher than the Asian countries. Nevertheless, these elasticities indicate changes in prices have little effect on rice consumption.

Income elasticities were diverse among the countries, ranging from positive to negative. Burma, India, Japan, Pakistan, Thailand, and Taiwan had negative income elasticities (table 10). These six countries are also net rice exporters. Positive income

Table 9.--Long run elasticities of rice yield, area harvested, and production in Asia and the U.S.

Country	Yield			Area harvested			Production ^d
	Adjustment coefficient ^a	Adjustment period ^b (year)	Long run elasticity ^c	Adjustment coefficient ^a	Adjustment period ^b (year)	Long run elasticity ^c	Long run elasticity
Bangladesh	1.000	1.00	.049	.480	2.08	.022	.072
Burma	---	---	---	1.000	1.00	.043	.043
India	1.000	1.00	.156	.452	2.21	.060	.216
Indonesia	.348	2.83	.269	1.000	1.00	.074	.343
Japan	1.000	1.00	.456	.629	1.59	.092	.503
South Korea	1.000	1.00	.396	.722	1.39	.071	.467
Pakistan	---	---	---	.234	4.27	.389	.389
Philippines	.555	1.80	.355	1.000	1.00	.116	.471
Thailand	---	---	---	.208	4.81	1.620	1.620
Taiwan	1.000	1.00	.119	.373	2.68	.1159	.171
United States	---	---	---	.340	2.94	.369	.311

^aAdjustment coefficient is 1 minus the coefficient of the one year lagged dependent variable.

If no lag effect was detected, the coefficient equals 1.

^bAdjustment period is 1 divided by the adjustment coefficient.

^cLongrun elasticity is its shortrun elasticity multiplied by the adjustment period.

^dLongrun production elasticities are calculated the same way as shortrun production elasticities.

For countries where longrun elasticities for yield or area harvested were not detected, the shortrun elasticities are also regarded as longrun elasticities with a one year adjustment period.

Table 10.--Price and income elasticities of rice demand in Asia and the U.S.

Countries	Price elasticities	Income elasticities
Bangladesh	-.028	---
Burma	-.026	-.218*
P.R.C. 1/	-.005	---
India	---	-.079
Indonesia 1/	-.046	.308*
Japan	---	-.189*
South Korea	-.169**	.102*
Pakistan	-.139	-.534*
Philippines	-.170	.243*
Thailand	---	-.131*
Taiwan	-.074	-.081**
United States	-.180*	.600*

* = 5% significance level

** = 10% significance level

1/ Elasticities with respect to Thai rice export prices.

Source: Grant et al., lto

elasticities were found for Indonesia, South Korea, and the Philippines. The preponderance of negative income elasticities in Asian countries stood in sharp contrast with the situation in the rest of the world, including the United States, where income elasticities were positive.

Implications for the U.S. Rice Industry

Rice production and consumption elasticities in Asia were very low, indicating

very little price response. This was expected for two reasons.

First, rice production is implicit given the central role of rice in the diet of Asian families. Second, once land is developed for paddy production, it tends to become specialized in that use and substitution of other crops is relatively restricted. Asian governments are more sensitive to prices for rice than other commodities. Most governments have implemented price control policies over domestic rice prices. Inelastic price response in production does not mean production is not increasing. Rather, rice production in Asia has increased substantially in response to subsidies for fertilizers and technological improvements.

Negative income elasticities of demand for rice, particularly in rice exporting countries, indicate that consumers in these countries are relatively satisfied with current levels of rice consumption, and that as their incomes grow, their rice consumption may decrease, supplemented by increased consumption of wheat, meat, and dairy products.

Given these observations, and the fact that Asian rice production has grown rapidly, it is reasonable to believe that Asia has the potential to increase supplies of rice for export. This is particularly evident in the current exporting countries such as Burma, India, Pakistan, PRC, and Thailand, and poses an even greater challenge to the U.S. industry in world rice trade.

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- (3) Grant, Warren R., John Beach, and William Lin, Factors Affecting Supply, Demand, and Prices of U.S. Rice, NED, ERS, USDA, ERS Staff Report No.
- (4) Ito, Shoichi, Econometric Analyses of Asian Rice Economics--With Special Emphasis on Twelve Selected Countries, M.S. Thesis, University of Arkansas, January 1985.
- (5) Mears, Leon A., The New Rice Economy of Indonesia, Gadjah Made University Press, 1981.
- (6) Wong, Chung Ming, A Model of the Rice Economy of Thailand, Ph.D. dissertation, Department of Economics, University of Chicago, 1976.

Table II.--Rice (rough equivalent): Supply, disappearance, area, and prices 1/

Item	1981/82	1982/83	1983/84 2/	1984/85 3/
Million cwt				
Supply				
Beginning stocks, August 1	16.5	49.0	71.5	46.9
Production	182.7	153.6	99.7	136.4
Total 4/	199.6	203.1	171.9	185.0
Disappearance				
Food 5/	42.5	37.3	33.4	38.0
Seed	4.4	3.2	3.9	3.0
Brewers	12.7	13.5	12.4	13.0
Total domestic 6/	68.6	62.9	54.7	59.0
Exports	82.0	68.9	70.3	62.0
Total	150.6	131.8	125.0	121.0
Ending stocks, July 31	49.0	71.5	46.9	64.0
Million acres				
Area				
Planted	3.83	3.29	2.19	2.80
Harvested	3.79	3.26	2.17	2.78
Allotment	1.80	1.80	---	---
Pounds per acre				
Yield per harvested acre	4,819	4,710	4,598	4,926
Dollars per cwt				
Prices				
Received by farmers	9.05	8.11	8.50	8.00-8.60
Loan rate	8.01	8.14	8.14	8.00
Target rate	10.68	10.85	11.40	11.90

1/ Consolidated supply and disappearance of rough and milled rice. Milled-rice data converted to rough-rice basis using annually derived extraction rates as factors. 2/ Preliminary. 3/ Projected. 4/ Includes imports. 5/ Food use includes shipments to U.S. territories. 6/ Includes a residual.

Table 12.--Rough rice: supply and disappearance 1/

Item	Year beginning August 1		August-December
	1982	1983	1984/85 2/
	1,000 cwt		
Beginning stocks	41,387	63,157	39,706
Farm production	153,588	99,720	137,033
Supply	194,975	162,878	176,739
Domestic 3/ Exports	131,244 574	119,934 3,238	47,941 1,645
Disappearance	131,818	123,172	49,586
Ending stocks, July 31 4/	63,157	39,706	127,153

1/ Includes supply and disappearance of rough rice only. 2/ Preliminary. 3/ Includes mill use, seed, and a residual. 4/ For August-December 1984/85, ending stocks as of December 31.

Table 13.--Milled rice: Supply and disappearance 1/

Item	Year beginning August 1		August-December
	1982	1983	1984/85 2/
	1,000 cwt		
Beginning stocks	5,477	5,896	5,121
Production	84,475	79,012	33,836
Imports	469	540	264
Supply	90,421	85,448	39,221
Food 3/ Brewers' use	26,413 9,613	23,753 8,825	10,742 3,703
Exports	48,499	47,749	18,869
Disappearance	84,525	80,327	33,314
Ending stocks, July 31 4/	5,896	5,121	5,907

1/ Includes supply and disappearance of milled rice only. 2/ Preliminary. 3/ Includes shipments to U.S. territories. 4/ For August-December 1984/85, ending stocks as of December 31.

Table 14.--Rice: Acreage, yield, production, by type and State

Type and State	Planted		Harvested		Yield		Production	
	1984	1985 1/	1983	1984	1983	1984	1983	1984
	1,000 acres				Pounds		1,000 cwt	
Long grain								
Arkansas	1,068	956	803	1,060	4,200	4,550	48,230	33,012
California	59	60	22	59	5,950	6,300	1,309	3,717
Louisiana	340	360	206	339	3,700	4,100	7,622	13,899
Mississippi	195	170	161	190	4,000	4,350	6,440	8,265
Missouri	74	65	60	73	4,100	4,600	2,460	3,358
Texas	404	355	308	402	4,375	4,950	13,475	19,899
U.S.	2,140	1,966	1,560	2,123	4,168	4,586	64,318	97,368
Medium grain								
Arkansas	80	64	102	79	4,780	5,260	4,784	4,155
California	282	240	199	281	7,100	7,100	14,129	19,951
Louisiana	190	110	179	189	3,950	4,250	7,071	18,033
Missouri	1	2	2	2	3,700	4,500	74	90
Texas	6	5	10	6	3,000	4,350	330	261
U.S.	560	421	492	557	5,360	5,833	27,388	32,490
Short grain								
Arkansas	12	10	10	11	4,540	4,680	363	515
California	91	70	107	90	7,150	7,350	7,651	6,615
Missouri	1	1		1		4,500		45
U.S.	104	81	117	102	6,969	7,034	8,014	7,175
All rice								
Arkansas	1,160	1030	915	1,150	4,280	4,600	39,159	52,900
California	432	370	328	430	7,040	7,040	23,089	30,283
Louisiana	530	470	385	528	3,820	4,150	14,693	21,932
Mississippi	195	170	161	190	4,000	4,350	6,440	8,265
Missouri	77	68	62	76	4,090	4,600	2,534	3,493
Texas	410	360	318	408	4,340	4,940	13,805	20,160
U.S.	2,804	2,468	2,169	2,782	4,598	4,926	99,720	137,033

1/ Intended plantings in 1985 as indicated by reports from farmers.

Table 15.--Rice stocks: Rough and milled 1/

Date	Rough					Milled			
	On farms or in farm ware- houses	At mills and in attached ware- houses	In ware- houses (not attached to mills)	In ports or in transit	Total all posi- tions	At mills and in attached ware- houses	In ware- houses (not attached to mills)	In ports or in transit	Total all posi- tions
1,000 cwt									
January 1									
1979	28,089	16,829	50,100	899	95,917	3,517	542	2,080	6,139
1980	31,021	15,038	57,278	581	103,918	3,137	810	2,123	6,070
1981	26,179	21,111	48,817	6	96,113	3,055	929	2,556	6,540
1982	48,404	22,952	59,117	911	131,384	2,735	907	1,414	5,056
1983	34,551	24,151	76,070	200	134,972	2,960	858	2,401	6,219
1984	30,681	19,541	64,143	344	114,709	3,867	456	1,395	5,718
1985	32,426	19,416	74,514	797	127,153	3,325	524	2,058	5,907
April 1									
1979	14,381	18,158	34,161	820	67,520	3,979	282	2,444	6,705
1980	12,030	15,581	39,224	563	67,398	3,500	402	2,888	6,790
1981	5,977	15,078	28,673	64	49,792	3,499	1,099	3,214	7,812
1982	26,807	21,289	41,773	411	90,280	4,371	725	1,689	6,785
1983	23,778	22,307	62,649	299	109,033	3,295	492	3,165	6,952
1984	15,802	17,432	46,515	17	79,766	3,838	464	2,999	7,301
August 1									
1979	623	8,781	15,033	701	25,138	2,531	374	1,678	4,583
1980	563	9,248	9,940	342	20,093	2,128	403	1,504	4,035
1981	208	5,417	4,206	9	9,840	2,744	446	1,665	4,855
1982	4,453	12,544	23,906	484	41,387	3,191	409	1,877	5,477
1983	6,032	11,190	45,899	36	63,157	2,843	223	2,830	5,896
1984 2/	1,250	11,017	27,425	14	39,706	3,976	50	1,095	5,121

1/ These estimates do not include stocks located in States outside the major producing States of Missouri, Mississippi, Arkansas, Louisiana, Texas, and California. 2/ Preliminary.

Source: Rice Stocks, Crop Reporting Board.

Table 16.--Rough rice: Average price received by farmers

Month	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Dollars per cwt															
August	5.16	5.15	5.34	10.90	10.20	9.83	6.65	8.02	8.44	10.00	10.60	11.80	7.31	8.41	8.22
September	5.18	5.24	6.37	13.30	10.90	9.19	6.56	8.12	7.56	9.81	10.20	10.70	7.75	8.48	8.17
October	5.26	5.46	7.05	14.80	11.30	8.87	6.48	9.13	7.62	10.30	10.90	10.20	7.73	8.80	8.08
November	5.19	5.25	7.42	16.70	11.60	8.59	6.46	10.20	7.76	9.83	11.60	9.86	7.78	8.80	8.13
December	5.09	5.30	7.64	15.50	10.90	8.51	6.57	11.00	7.98	9.41	13.10	9.34	8.06	8.66	8.08
January	5.31	5.53	7.84	15.80	10.80	7.95	6.79	10.70	8.07	9.88	13.20	9.34	8.05	8.57	8.14
February	5.44	5.55	8.14	16.90	11.30	7.54	6.87	10.70	7.87	11.00	13.00	9.46	8.26	8.85	
March	5.36	5.60	8.26	17.20	11.10	6.17	6.81	10.70	8.18	11.70	13.40	8.99	7.99	8.63	
April	5.33	5.58	8.51	15.90	11.00	7.15	6.95	10.80	8.52	11.60	13.80	8.54	8.23	8.49	
May	5.30	5.57	8.56	17.20	11.10	7.06	7.30	10.10	8.74	11.30	13.30	8.55	8.23	8.24	
June	5.20	5.58	8.74	17.50	11.20	6.82	7.24	9.58	8.73	10.20	11.90	8.54	7.88	8.20	
July	5.33	5.35	10.80	11.90	10.00	7.45	6.87	9.49	9.10	10.80	12.80	8.25	7.95	8.18	
Weighted average	5.17	5.34	6.73	13.80	11.20	8.35	7.02	9.49	8.16	10.50	12.80	9.05	8.11	8.76	
Loan rate	4.86	5.07	5.27	6.07	7.54	8.52	6.19	6.19	6.40	6.79	7.12	8.01	8.14	8.14	8.00

Table 17.--Milled rice: Average price, f.o.b. mills, at selected milling centers

Year and type	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
Dollars per cwt bagged													
Long 1/	Southwest Louisiana												
1980	20.75	22.00	23.40	25.00	26.75	27.00	27.25	27.70	28.25	28.00	27.90	27.50	25.95
1981	26.40	24.30	23.25	21.90	20.75	19.80	18.60	18.00	17.55	17.60	17.20	17.00	20.20
1982	17.50	17.40	17.50	17.55	18.40	18.35	17.50	17.50	18.50	18.50	18.60	18.75	18.00
1983	19.40	19.75	19.35	19.50	19.50	19.50	19.25	19.25	19.25	19.25	19.25	19.25	19.38
1984 2/	18.25	18.25	17.60	18.00	18.00	18.00							
	Houston, Texas												
1980	21.00	21.70	23.10	24.75	26.55	26.55	25.75	27.10	27.75	28.00	27.40	27.00	25.55
1981	25.00	24.85	23.50	22.60	22.00	21.75	20.20	19.20	19.00	19.00	18.75	17.75	21.15
1982	18.25	18.75	18.00	18.00	18.00	19.00	19.00	19.00	19.00	19.00	19.10	19.40	18.70
1983	19.50	19.65	20.00	20.00	20.00	20.25	20.25	20.25	20.10	19.50	19.50	19.50	19.88
1984 2/	19.38	18.69	18.75	18.75	18.75	18.75							
	Arkansas												
1980	20.60	22.00	23.40	24.90	26.10	26.10	25.75	26.70	27.50	28.00	27.90	27.50	25.55
1981	26.40	24.30	23.05	22.30	20.85	19.60	19.00	18.20	17.55	17.40	17.20	16.60	20.20
1982	17.10	17.00	17.00	17.55	18.40	18.35	17.50	17.50	18.00	18.40	18.50	18.50	17.80
1983	18.50	18.50	18.85	19.00	19.00	19.00	18.50	18.50	18.50	18.50	18.50	18.50	18.65
1984 2/	18.38	18.25	18.25	18.25	18.00	18.00							
Medium 1/	Southwest Louisiana												
1980	20.50	20.80	21.60	24.40	26.40	27.00	27.10	27.50	27.55	28.00	28.00	27.75	25.55
1981	26.40	24.20	22.90	21.15	20.00	18.75	17.75	16.10	15.95	16.40	16.20	16.00	19.30
1982	16.50	16.50	16.45	16.65	17.75	17.30	16.50	16.50	16.50	17.10	17.50	17.50	16.90
1983	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50
1984 2/	16.00	16.00	15.50	15.50	15.50	15.50							
	Arkansas												
1980	20.60	21.30	22.50	24.00	25.75	26.10	25.75	26.70	27.40	28.00	28.00	27.50	25.30
1981	26.40	24.10	22.95	21.30	19.85	18.60	17.90	17.05	16.50	16.40	15.90	15.60	19.40
1982	16.10	16.50	16.10	16.65	17.75	17.10	16.50	16.50	16.60	17.10	17.50	17.50	16.80
1983	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.20	17.00	17.00	17.00	17.35
1984 2/	16.88	16.69	16.35	16.22	16.00	15.75							
Medium 3/	California												
1980	23.00	23.20	24.75	25.00	26.75	30.00	30.00	30.00	30.00	30.00	30.00	30.00	27.70
1981	30.00	27.60	24.50	22.80	21.40	20.50	19.10	18.45	16.90	16.90	16.70	16.40	20.95
1982	16.25	16.10	15.55	15.50	15.50	16.50	16.00	16.00	16.00	15.90	15.95	15.75	15.90
1983	15.65	15.50	15.70	15.50	15.50	15.50	15.50	15.38	15.25	15.25	15.25	15.25	15.44
1984 2/	15.25	15.25	15.25	15.25	15.25	15.25							
Short 3/													
1980	23.00	23.20	24.75	25.00	26.75	30.00	30.00	30.00	30.00	30.00	30.00	30.00	27.70
1981	30.00	28.25	25.75	23.90	22.00	22.00	20.25	19.50	18.25	18.25	18.25	18.10	22.05
1982	17.20	16.70	15.55	15.50	15.50	16.90	16.00	16.00	16.00	16.00	16.00	16.00	16.10
1983 2/	15.80	15.50	15.70	15.50	15.50	15.50	15.50	15.38	15.25	15.25	15.25	15.25	15.45
1984 2/	15.25	15.25	15.25	15.25	15.25	15.25							

1/ U.S. No. 2--broken not to exceed 4 percent. 2/ Preliminary. 3/ U.S. No. 1.

Source: Compiled from Rice Market News, AMS.

Table 18.--Rice byproducts: Monthly average price, southwest Louisiana

Year and type	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
Dollars per cwt, bagged 1/													
Milled second head													
1980	11.05	10.70	11.00	11.15	12.45	12.90	12.75	13.55	13.40	14.45	14.55	14.10	12.65
1981	13.00	11.90	11.00	11.00	11.00	10.60	10.00	8.60	9.25	10.00	10.00	10.00	10.55
1982	10.00	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75
1983	9.75	10.25	10.25	10.25	10.25	10.25	10.25	10.81	10.20	10.00	10.00	10.00	10.19
1984	8.50	8.75	8.80	8.00	8.00	8.00							
Dollars per ton 2/													
Rice bran, fob mills													
1980	76.90	84.70	86.40	95.50	N.Q.	101.90	73.60	59.10	57.50	60.00	71.60	69.15	76.05
1981	51.50	49.60	52.75	59.90	73.65	82.50	64.35	50.40	55.50	57.50	61.10	N.Q.	59.90
1982	52.80	53.00	54.00	77.65	85.00	77.50	52.15	47.25	59.65	70.30	61.25	N.Q.	62.80
1983	62.15	70.00	94.00	108.35	120.85	98.50	57.50	50.00	67.50	60.00	N.Q.	59.00	77.08
1984	69.16	49.50	45.13	53.75	69.16	85.00							
Dollars per ton 2/													
Rice millfeed, fob mills													
1980	29.50	37.40	35.00	36.90	48.40	54.00	15.00	11.00	14.95	17.00	27.00	31.40	29.80
1981	22.60	10.90	17.75	22.00	30.65	29.75	16.50	13.15	13.40	15.40	19.40	N.Q.	19.25
1982	16.00	16.75	15.25	26.15	35.00	45.00	13.50	15.25	19.35	23.60	22.10	23.00	22.60
1983	24.00	25.40	33.30	42.10	61.65	53.00	22.50	24.75	31.20	21.25	25.00	27.75	32.66
1984	23.50	18.75	18.63	19.38	24.50	31.75							

1/ U.S. No. 4 or better. 2/ Prices quoted as bulk. NQ = not quoted.

Source: Compiled from Rice Market News, AMS.

Table 19.--Brewers' prices: Monthly average price for Arkansas brewers' rice and New York brewers' corn grits

Year and State	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
Dollars per cwt													
Arkansas													
1980/81	9.75	9.75	9.80	10.10	10.00	10.00	10.00	10.00	10.00	10.00	9.60	9.50	9.90
1981/82	9.30	9.00	8.55	8.25	8.25	8.20	7.60	7.40	7.30	7.00	7.00	6.80	7.90
1982/83	6.55	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
1983/84	6.50	6.75	7.00	7.00	6.90	6.76	6.63	6.50	6.62	6.70	6.90	7.10	6.78
1984/85	7.25	7.30	7.30	7.30	7.30	7.30							
New York													
1980/81	11.60	12.11	12.26	12.74	12.42	12.44	12.60	12.64	12.72	12.42	12.57	12.85	12.45
1981/82	12.22	10.45	10.16	9.96	9.97	9.97	10.28	10.48	10.82	10.75	10.66	10.43	10.51
1982/83	9.91	9.75	9.60	9.74	9.78	10.07	10.52	10.82	11.35	11.32	11.58	12.06	10.54
1983/84	12.85	13.06	12.77	12.64	11.96	11.81	11.95	12.58	12.99	12.95	13.19	13.01	12.65
1984/85													

Sources: Compiled from Rice Market News, AMS, and Milling and Baking News.

Table 20.--Thailand milled rice prices,
f.o.b. Bangkok, 1/

Type	1981/82	1982/83	1983/84	1984/85
Dollars per metric ton				
100% 1st grade				
August	528	330	326	317
September	517	313	349	298
October	485	295	336	295
November	458	299	333	273
December	409	307	321	270
January	378	301	310	270
February	364	318	302	
March	370	330	303	
April	356	330	305	
May	342	330	302	
June	334	319	301	
July	325	311	318	
Average	406	315	317	
100% 2nd grade				
August	508	300	286	282
September	497	283	309	263
October	465	266	300	260
November	438	269	293	238
December	389	277	281	233
January	352	270	268	240
February	332	280	263	
March	340	290	263	
April	326	290	265	
May	312	290	263	
June	304	279	266	
July	295	271	283	
Average	380	280	278	
5% broken				
August	498	287	279	272
September	487	270	299	253
October	455	255	290	250
November	428	258	283	228
December	379	266	271	225
January	342	260	258	230
February	324	270	253	
March	325	282	253	
April	311	282	256	
May	299	280	253	
June	291	269	256	
July	282	261	273	
Average	368	270	269	

1/ Includes export premium, export tax, and cost of bags. Packed in bags of 100 kgs net.
Source: Compiled from Rice Market News, AMS.

Table 21.--Milled rice: Average c.i.f.
quotations, at Rotterdam

Type	1981/82	1982/83	1983/84	1984/85
Dollars per metric ton				
U.S. No. 2 4%, bagged				
August	629	515	535	500
September	601	463	535	485
October	587	449	530	493
November	562	446	520	496
December	538	451	518	496
January	517	459	518	496
February	508	488	530	
March	485	496	534	
April	469	504	531	
May	474	513	529	
June	487	532	529	
July	506	535	513	
Average	530	488	527	
Thai SWR 100% Grade A, bagged				
August	603	369	383	382
September	600	363	410	360
October	570	347	392	350
November	520	352	369	302
December	483	363	355	294
January	438	360	351	292
February	424	366	353	
March	426	389	354	
April	422	376	355	
May	408	382	358	
June	376	372	363	
July	346	367	382	
Average	468	367	369	
Thai SWR 100% Grade B, bagged				
August	583	342	345	333
September	579	338	368	317
October	549	322	351	301
November	497	328	329	272
December	463	338	317	260
January	418	336	315	258
February	402	335	315	
March	405	348	316	
April	401	336	315	
May	382	342	314	
June	352	335	319	
July	319	330	337	
Average	446	336	328	

Source: Compiled from Rice Market News, AMS.

Table 22.--World rice supply and utilization

Year	Area harvested	Yield 1/	Production 2/ Rough Milled		Exports 3/	Total use 4/	Ending stocks 5/	Stocks to use ratio 6/
	Million hectares							
1960/61	120.1	1.95	233.8	160.0	6.5	160.3	8.0	5.0
1961/62	115.7	1.86	215.7	147.3	6.3	147.7	7.0	4.8
1962/63	119.6	1.91	228.2	155.2	7.3	155.3	6.9	4.4
1963/64	121.5	2.05	248.4	169.1	7.7	167.2	8.7	5.2
1964/65	125.3	2.12	265.6	180.8	8.2	177.8	11.8	6.6
1965/66	124.0	2.05	254.2	173.3	7.9	173.1	12.0	6.9
1966/67	125.7	2.09	262.5	179.3	7.8	180.7	10.6	5.9
1967/68	127.0	2.19	277.8	189.4	7.2	186.6	13.4	7.2
1968/69	128.7	2.23	287.0	195.6	7.5	192.3	16.7	8.7
1969/70	131.4	2.25	295.9	201.6	8.2	199.7	18.6	9.3
1970/71	132.7	2.36	313.5	213.6	8.6	214.5	17.7	8.3
1971/72	134.8	2.35	317.5	216.4	8.7	218.8	15.3	7.0
1972/73	132.7	2.31	307.2	209.6	8.4	214.6	10.3	4.8
1973/74	136.5	2.45	334.7	228.0	7.7	225.9	12.5	5.5
1974/75	137.8	2.41	332.1	226.3	7.3	228.1	10.7	4.7
1975/76	142.7	2.51	358.4	243.8	8.4	235.2	19.3	8.2
1976/77	141.3	2.46	348.3	236.8	10.6	238.4	17.7	7.4
1977/78	143.3	2.58	370.0	251.4	9.6	246.4	22.8	9.2
1978/81	144.1	2.69	387.6	263.7	12.0	258.6	27.8	10.8
1979/80	141.4	2.68	378.5	258.1	12.7	262.6	23.3	8.9
1980/81	144.4	2.76	398.8	271.0	13.1	272.2	22.1	8.1
1981/82	145.0	2.84	412.5	280.6	11.6	281.4	21.2	7.5
1982/83	141.1	2.97	419.3	285.5	11.9	289.5	17.3	6.0
1983/84 7/	144.6	3.12	451.5	307.0	12.5	307.1	17.1	5.6
1984/85 8/	144.2	3.20	465.0	316.6	11.6	314.2	19.5	6.2

1/ Yields are based on rough production. 2/ Production is expressed on both rough and milled basis; stocks, exports, and utilization are expressed on a milled basis. 3/ Exports quoted on yearly basis. 4/ For countries for which stock data are not available, utilization estimates represent "apparent" utilization; i.e., they include annual stock level adjustments. 5/ Stocks data are based on an aggregate of differing market years and should not be construed as representing world stock levels at a fixed point in time. Stocks data are not available for all countries and exclude the USSR, China, North Korea, and parts of Eastern Europe. 6/ Stocks-to-use represents the ratio of marketing year ending stocks to total utilization. 7/ Preliminary. 8/ Forecast.

Source: Compiled from World Grain Situation, FAS.

Table 23--World rice production and stocks: Selected countries or regions 1/

Country or region	Crop year 2/				
	1980/81	1981/82	1982/83	1983/84	1984/85 as of Mar. 11
Million metric tons					
Bangladesh	20.8	20.5	21.3	21.8	21.6
Burma	13.3	14.1	14.4	14.4	14.5
China, Mainland	139.9	144.0	161.2	168.9	178.0
India	80.5	80.0	70.7	89.7	89.3
Indonesia	29.7	32.8	33.6	35.2	38.0
Japan	12.2	12.8	12.8	13.0	14.2
Korea, Rep. of	6.0	7.1	7.3	7.6	8.0
Pakistan	4.7	5.1	5.0	5.0	5.1
Thailand	17.4	17.8	16.9	19.6	18.5
Subtotal	324.5	334.2	343.4	375.2	387.2
Australia	.7	.9	.5	.6	.8
Brazil	8.6	9.2	7.8	9.0	9.0
EC-10	1.1	1.1	1.1	1.1	1.2
All others	57.3	58.8	59.5	60.7	61.2
Total non-U.S.	392.2	404.2	412.3	446.6	458.8
U.S.	6.6	8.3	7.0	4.5	6.2
World total	398.8	412.5	419.3	451.1	465.0
Ending stocks 3/					
Non-U.S.	21.5	19.6	15.0	15.6	17.4
U.S.	.5	1.6	2.3	1.5	2.1
World total	22.1	21.2	17.3	17.1	19.5

1/Production is rough basis, but ending stocks are milled basis. 2/World rice harvest stretches over 6-8 months. Thus, crop year represents the crop harvested in late 1979 and early 1980 in the Northern Hemisphere and the crop harvested in early 1980 in the Southern Hemisphere. 3/Stocks are based on an aggregate of different local marketing years, and should not be construed as representing world stock levels at a fixed point in time. In addition, stocks data are not available for all countries.

Source: Compiled from World Grain Situation, FAS.

Table 24.—World rice trade (milled basis): Exports and imports of selected countries or regions 1/

Country or region	Calendar year				
	1981	1982	1983	1984	1985 as of Mar. 11
1,000 metric tons					
Exports					
United States	3,008	2,487	2,330	2,129	2,000
Argentina	110	92	68	185	160
Australia	335	530	251	300	400
Burma	674	701	750	750	600
China, Mainland	583	460	550	900	900
China, Taiwan	92	307	531	275	300
EC-10	812	627	793	805	745
Egypt	134	22	21	50	0
Guyana	78	35	45	40	35
India	1,143	633	165	200	100
Japan	795	318	321	102	0
Korea, N.	200	250	250	250	250
Nepal	43	50	0	20	50
Pakistan	1,127	794	1,299	1,057	900
Philippines	83	0	40	0	0
Thailand	3,049	3,620	3,700	4,528	4,300
Uruguay	215	227	189	155	180
Other	647	463	518	723	645
World trade	13,128	11,616	11,821	12,469	11,565
Imports					
Bangladesh	34	296	82	550	400
Brazil	142	124	400	175	200
Canada	99	108	115	115	120
China, Mainl.	110	250	75	100	100
Cuba	199	201	207	200	200
East Europe	353	299	337	335	330
EC-10	1,291	1,092	1,104	1,057	1,055
India	70	10	310	745	100
Indonesia	543	328	1,175	387	50
Iraq	350	369	474	500	500
Iran	583	587	680	700	700
Ivory Coast	335	363	434	350	350
Korea, Republic of	2,292	228	216	7	0
Kuwait	95	100	110	110	110
Malagasy	196	357	185	100	100
Malaysia	317	403	357	500	550
Mexico	66	16	0	170	250
Nigeria	686	666	711	450	500
Peru	103	58	101	48	0
Portugal	128	110	30	105	85
Saudi Arabia	427	471	491	500	550
Senegal	322	370	362	375	350
South Africa	134	146	158	165	170
Sri Lanka	168	217	157	40	100
Syria	72	102	120	120	120
U.A. Emirates	285	170	175	175	175
USSR	1,283	859	400	450	400
Viet Nam, Soc. Rep.	30	150	30	250	400
Other	2,415	3,166	2,825	3,690	3,600
World Trade	13,128	11,616	11,821	12,469	11,565

Source: Compiled from World Grain Situation, FAS.

Table 25.--U.S. rice exports by type 1/

Crop year	Regular milled	Brown	Parboiled	Rough	Brokens	Other	Total 2/
1,000 metric tons							
1973	1,080.1	165.2	345.7	0.2	11.3	1.0	1,603.6
1974	1,388.3	546.5	242.5	.3	14.3	2.5	2,194.4
1975	777.3	535.8	406.0	.3	11.6	.9	1,731.8
1976	1,215.3	346.7	459.2	32.5	37.7	5.7	2,097.0
1977	1,275.8	232.7	502.5	132.5	87.1	39.4	2,270.2
1978	1,388.8	276.1	627.3	90.6	20.8	27.8	2,431.4
1979	1,461.9	475.4	598.4	54.5	40.1	75.5	2,705.9
1980	957.7	1,202.7	781.7	13.5	18.0	54.0	3,027.6
1981	941.8	502.6	1,000.9	18.7	5.9	39.1	2,681.9
1982	954.1	354.3	846.5	188.9	12.7	35.1	2,218.7
1983	882.4	334.3	821.8	105.0	37.6	89.8	2,270.9
1984 3/	427.1	51.4	325.1	53.0	16.6	35.6	908.8

1/ All rice is reported on a milled-equivalent basis. 2/ Numbers may not add due to rounding.
 3/ August-December only.

Source: U.S. Bureau of the Census.

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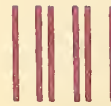
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